## CLAIMS

1. A breakwater device in which one or more energy absorbers arranged between a plurality of structures having neutral buoyancy, as hereinbefore defined, are adapted to remove wave energy from the relative motion of the structures and opposing forces which are created between these structures by virtue of the fact that the structures are located in different parts of the irrotational oscillating process of the water mass which occurs naturally during the passage of waves.

2. A breakwater device as claimed in claim 1 in which the floating structures comprise first and second structures, which in use are arranged substantially parallel one to another, and an energy absorber device connected therebetween whereby, in use, the device absorbs energy from said opposing forces.

3. A breakwater device according to claim 2 comprising a mechanical interconnection from the first to the second structure, the interconnection supporting the energy absorber.

4. A breakwater device according to either claim 2 or 3 wherein the breakwater device includes a third structure, which in use is arranged substantially parallel to the other two structures.

5. A breakwater device according to claim 4 wherein the distance between the first and second structures is substantially twice the distance between the second and third structures.

6. A breakwater device according to claim 5 wherein the distance between first and third structures is $\lambda/2$ where $\lambda$ is the maximum

wavelength of waves in that particular location where the breakwater is to be deployed.

7. A breakwater device according to any of claims 1 to 6 wherein the structures are substantially parallelepiped structures.

8. A breakwater device according to claim 7 wherein the structures are plate-like and plate-like is defined as the ratio between the area of the structure, which is presented to the direction of a wave, and the square of the thickness of the structure, said ratio being greater than 10.

9. A breakwater device as claimed in claim 8 in which said ratio is greater than 20.

10. A breakwater device as claimed in claim 9 in which said ratio is greater than 30.

11. A breakwater device according to claim 8 wherein the height of the plate like structures is less than a half the wavelength ($\lambda/2$) of waves in that particular location where the breakwater is to be deployed.

12. A breakwater device as claimed in claim 11 in which said height is less than ($\lambda/5$) of the waves in that particular location.

13. A breakwater device according to any preceding claim in which the or each energy absorber comprises water chokes arranged to squeeze water through a throttle so as to dissipate energy upon relative displacement of the structures.

14. A breakwater device according to any of claims 1 to 12 in which the or each energy absorber comprises an electromagnetic arrangement,

sealed inside a suitable waterproof container, configured to generate an electromotive force upon relative displacement of the structures.

15. A breakwater device according to any one of claims 1 to 12 in which the or each energy absorber includes rack and pinion arrangements fitted with suitable gears to convert linear to rotating motion.

16. A breakwater device according to any of claims 1 to 12 in which the or each energy absorber comprises a piston and cylinder arrangement so arranged as to act as a dashpot.

17. A breakwater device according to any of claims 1 to 12 in which the or each energy absorber includes a bi-directional piston and cylinder, with a fluid arranged to pass through energy absorbers so as to absorb wave energy when the structures move towards one another as well as away from one another.

18. A breakwater device according to any preceding claim wherein the breakwater device, in use, is positioned in a body of water, such as an area of open sea, so that the lengthwise axes of the structures extend substantially parallel to an incident wave front.

19. A breakwater system comprising a plurality of breakwater devices according to any of claims 1 to 15, said system being capable of maintaining or modifying coastal deposition and/or erosion patterns

20. A method of controlling coastal erosion using the breakwater devices of any of claims 1 to 18 or the system of claim 19.

21. An energy absorbing breakwater device according to any of the preceding claims wherein the plate like structures are orientated horizontally from the surface downwards.

22. A propulsive device for use in a body of water comprising first and second submerged structures arranged substantially parallel to one another and connected by a strut, the first and second structures both comprising non-return valve arrays, which arrays permit water to flow in a substantially horizontal direction through the respective array in one direction, both arrays being arranged to be operable in the same direction whereby when the device is orientated generally orthogonal to the incident wavefront with the structures spaced apart by approximately half a wave length of waves in the body of water, the natural irrotational oscillation of the water mass acts in the reverse direction onto the one valve array compared with the other.

23. A propulsive device according to claim 22 wherein the valve arrays are arranged such that the direction of irrotational oscillating motion of the water mass closes one array and moves it in that direction carrying the whole assembly with it whilst the reverse irrotation of the water mass acting on the other array opens it and allows the water mass to pass through, with the reverse happening as the wave system passes wherein the first array is opened and the second closed but with the direction of motion of the overall device remaining the same as before.

24. A propulsive device as claimed in 22 or claim 23 wherein both sets of non-return valve arrays are capable of being set to open with the direction of the oncoming wave crests whereby propulsion is achieved in the reverse direction through the closing of the non-return valve array in the trough by the reverse irrotational oscillating motion occurring in that part of the water mass moving the whole assembly in that direction.

25. A propulsive device as claimed in any one of claims 22 to 24 in which both sets of non-return valves are arranged to be set to close with the direction of the oncoming wave crests wherein propulsion is achieved

in the same direction as the wave crests and the non-return valves open in the wave troughs to allow the reverse oscillating mass to pass through.

26. A propulsive device as claimed in any one of claims 22 to 24 comprising control means adapted to change the direction of operation of the non-return valves so as to change the direction of propulsion of the assembly whilst in operation.

27. A propulsive device as claimed in any one of claims 22 to 26 which is fitted with rudders to enable the device to "tack" at an angle into or with the direction of the waves.

28. A propulsive device as claimed in claim 26 in which the strut is of adjustable length, and wherein said control means is arranged to be operable independently on one structure with respect to the other so as to enable opposing motion of the structures to be achieved by wave force to adjust the strut for matching the nominal spacing of the structures to changing wave lengths whilst in operation.

29. A propulsive device as claimed in any one of claims 22 to 28 comprising an energy absorbing device associated with the strut and operable to extract energy.

30. A propulsion device as claimed in claim 29 in which the energy absorbing device is arranged to power an additional propeller type propulsion means.

31. A method of using a propulsive device as claimed in any one of claims 22 to 30 wherein the propulsive forces produced are used to provide a static or moving force with, against or at an angle to the prevailing waves.

32. A method of using a propulsive device as claimed in any one of claims 22 to 30 wherein the forces are used for towing.

33. A method of using a propulsive device as claimed in claim 32 wherein the energy absorbed in creating the forces and motions is used to form a calm area of sea behind the device.

34. A propulsive device according to any one of claims 22 to 33 wherein the submerged structures are of parallelepiped plate like form.

35. A propulsive device according to any one of claims 22 to 34 wherein the plate like structures are both horizontally orientated from the surface downwards.

36. A propulsive device according to any one of claims 22 to 35 wherein the device comprises a third structure parallel with but spaced horizontally from the first and second structures.

37. A propulsive device according to claim 36 wherein the third structure is adjustable relative to the other two.

38. A propulsion device according to any one of claims 22 to 37 wherein the non-return valves are louver type valves.

39. A multi-hulled vessel comprising at least two hulls which are connected by a sliding or calliper type link wherein the hulls can move away and towards each other whilst remaining connected and mainly parallel to each other.

40. A vessel as claimed in claim 39 wherein the available relative motion between the hulls is large enough to accommodate the differential motion created by different parts of the irrotational oscillating mass of

water that one hull is located in, in relation to the other, during the passage of the craft through the waves thereby preventing large sideways forces being applied to the hulls by the irrotating water masses.

41. A vessel as claimed in claim 39 or 40 wherein an energy absorbing device operable by virtue of the differential forces and motions which can occur between the hulls, is arranged to extract energy which can be used to propel the craft generally in the fore and aft directions of the hulls using propellers or other mechanical means.

42. A device as claimed in any preceding claim in which the connecting means between the floating structures or hulls is used to measure wave length, height or period and/or provide a stabilised platform for equipment or personnel.

43. A protection means for long vessels, which straddle in a diagonal way more than one wave, comprising horizontal differential articulation or double articulation of the structure along its length to accommodate the different irrotational patterns occurring in the water mass in different parts of the wave system.